Deber 4a
Estática

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119) $\overline{AB} = \langle -40, 70, -40 \rangle$ inc

$|AB| = \sqrt{40^2+70^2+40^2} \Rightarrow 90$ inc

$\overline{AC} = \langle 45, 60, -40 \rangle$ inc.

$|AC| = \sqrt{45^2+60^2+40^2} \Rightarrow 85$ in

$W = \langle 0, -200, 0 \rangle$

$N = \langle 0, 2/\sqrt{5}, \sqrt{5}/5 \rangle$

$T_{AB} = \frac{\langle -40, 70, -40 \rangle}{90} = \langle -0,4; 0,7; -0,4 \rangle$

$T_{AC} = \frac{\langle 45, 60, -40 \rangle}{85} = \langle 0,52; 0,7; -0,47 \rangle$

$\Sigma F = 0$

$T_{AB} + T_{AC} + W + N = 0$

$\langle -T_{AB}0,4 + 0,52T_{AC} \rangle + \langle 0,7T_{AB} + 0,7T_{AC} + 2/\sqrt{5} - 200 \rangle$

$+ \langle -0,4T_{AB} - 0,47T_{AC} + \sqrt{5}/5 \rangle + T = 0$

$T_{AB} = 65,59$ lb

$T_{AC} = 55,1$ lb

121) $\overline{AB} = \langle -130, 400, 160 \rangle$

$|AB| = \sqrt{-130^2+400^2+160^2}$

$|AB| = 450$

$T_{AB} = \frac{\langle -130, 400, 160 \rangle}{450}$

$T_{AB} = \langle -0,28; 0,88; 0,35 \rangle T$

$\overline{AC} = \langle -150, 400, -240 \rangle$

$|\overline{AC}| = \sqrt{-150^2+400^2-240^2}$

$|AC| = 490$

$T_{AC} = \frac{\langle -150, 400, -240 \rangle}{490} = \langle -0,39; 0,81; -0,48 \rangle T$

$\Sigma F_i = 0$

$-0,28T - 0,35T + P = 0$

$\Sigma F_j = 0$

$0,88T + 0,81T - 376 = 0$

$\Sigma F_k = 0$

$0,35T - 0,48T + Q = 0$

$P = 131$ N

$Q = 30$ N

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135)

$\overline{AB} = \langle -15{,}8, 15, 12 \rangle$ $\quad \overline{AC} = \langle -15{,}58, 15{,}6, -15 \rangle$

$|AB| = 24{,}74\,m$ $\quad |AC| = 28{,}54\,m$

$T_{AB} = 10 \dfrac{\langle -15{,}8, 15, 12 \rangle}{24{,}73}$ $\quad T_{AC} = 7{,}5 \dfrac{\langle -15{,}58, 15{,}6, -15 \rangle}{28{,}54}$

$T_{AB} = \langle -6{,}38, 6{,}06, 4{,}85 \rangle KN$ $\quad T_{AC} = \langle -4{,}09, 4{,}58, -3{,}94 \rangle KN$

$R = T_{AB} + T_{AC} = \langle -10{,}47, 10{,}64, 8{,}79 \rangle KN$

$|R| = 15{,}14 KN$

$\cos\theta_x = -0{,}68$

$\cos\theta_y = 0{,}72$

$\cos\theta_z = 0{,}06$

136)

$\overline{AB} = \langle 450, 600, 0 \rangle mm$ $\quad \overline{AC} = \langle 0, 600, -320 \rangle mm$

$|\overline{AB}| = 750\,mm$ $\quad |AC| = 680\,mm$

$\overline{AD} = \langle 500, 600, 360 \rangle$

$|AD| = 860\,mm$

$T_{AB} = \langle 0{,}6, 0{,}8, 0 \rangle T_{AB}$

$T_{AC} = \langle 0, 0{,}88, -0{,}47 \rangle T_{AC}$

$T_{AD} = \langle 0{,}58, 0{,}69, 0{,}41 \rangle$

$0{,}6 T_{AB} - 0{,}58 T_{AD} = 0$

$0{,}8 T_{AB} + 0{,}58 T_{AD} + 0{,}88 T_{AC} - 1105 N = 0$

$-0{,}47 T_{AC} + 0{,}41 T_{AD} = 0$

$T_{AB} = 997$

$T_{AC} = 0{,}88$

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